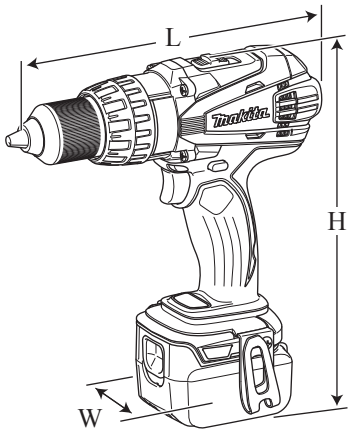
TECHNICAL INFORMATION

Model No. ► BDF448

Description ► 14.4V Cordless Driver Drill



Dimensions: mm (")	
Length (L)	225 (8-7/8)
Width (W)	79 (3-1/8)
Height (H)	259 (10-1/4)

CONCEPT AND MAIN APPLICATIONS

Model BDF448 is a successor model of BDF444, featuring:

- Extremely compact tool size with an overall length of 225mm (8-7/8") - the shortest in its class
- High power and productivity achieved with new DC motor (FD31-30)
- Enhanced dust and drip-proof performance to ensure reliable operation even under bad weather.
- Equipped with Battery fuel gauge for increased maneuverability.

Note: This product is not compatible with 14.4V-1.3Ah battery BL1415.

This product is available in the following variations.

Model No.	Battery		Battery cover	Charger	Plastic carrying case	Systainer case	Housing color
	Type	Quantity					
BDF448Z	No	No	No	No	No	No	Makita blue
BDF448RFE	BL1430	2	1	DC18RC	Yes	No	
BDF448RFE3	BL1430	3	2	DC18RC	Yes	No	
BDF448ZX	No	No	No	No	No	Yes	
BDF448RFX	BL1430	2	1	DC18RC	No	Yes	

Specification

Battery	Voltage: V	14.4
	Capacity: Ah	3.0
	Energy capacity: Wh	44
	Cell	Li-ion
	Charging time (approx.): min.	22 with DC18RC
No load speed: min^{-1}=rpm	High	0 - 1,800
	Low	0 - 350
Capacity of drill chuck: mm (")		1.5 (1/16) - 13 (1/2)
Capacity: mm (")	Steel	13 (1/2)
	Wood	65 (2-9/16)
Torque setting		21 stage + drill mode
Clutch torque setting: N.m (in.lbs)		1.0 - 10.0 (9 - 89)
Max lock torque: N.m (in.lbs)		67 (590)
Max fastening torque: N.m (in.lbs)	Soft joint	43 (380)
	Hard joint	77 (680)
Electric brake		Yes
Mechanical speed control		Yes (2 speed)
Variable speed control		Yes
Reversing switch		Yes
LED job light		Yes
Weight according to EPTA-Procedure 01/2003*: kg (lbs)		2.2 (4.8)

* with Battery BL1430

Standard equipment

+ – bit 2-45 2
Bit holder 1
Belt clip 1
Grip assembly 1

Note: The standard equipment for the tool shown above may vary by country.

Optional accessories

Fast charger DC18RA
(for US, Canada, Guam, Panama, Mexico and Colombia)
Fast charger DC18RC
(for all countries except the countries above)
Charger DC18SD
Charger DC24SC
Automotive charger DC18SE
Battery BL1430
Battery protectors
Drill bits for wood
Drill bits for steel
Driver bits

Repair

CAUTION: Repair the machine in accordance with "Instruction manual" or "Safety instructions".

[1] NECESSARY REPAIRING TOOLS

Code No.	Description	Use for
1R359	Drill chuck removing tool	(Use this tool if Drill chuck cannot be removed by the method of described in "[3]-1 Drill chuck disassembling".)
	Hex wrench 10	removing/ mounting Drill chuck

[2] LUBRICATION

It is not required to lubricate the gear section because the portion is replaced as a factory-assembled gear unit.

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Drill Chuck

DISASSEMBLING

(1) Remove M6x22 Flat head screw as drawn in **Fig. 1**.
(2) Preset the machine as drawn in **Fig. 2**. And set Hex wrench 10 to Vise as drawn in **Fig. 3**.
(3) Gripping Hex wrench 10 with Drill chuck firmly, remove Drill chuck as drawn in **Fig. 4**.

Fig. 1

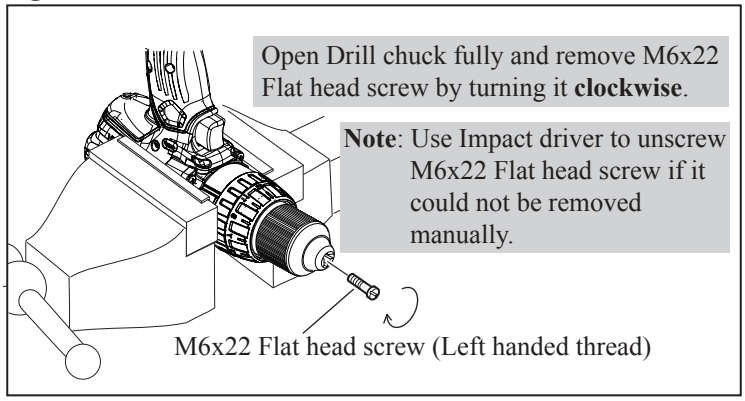


Fig. 2

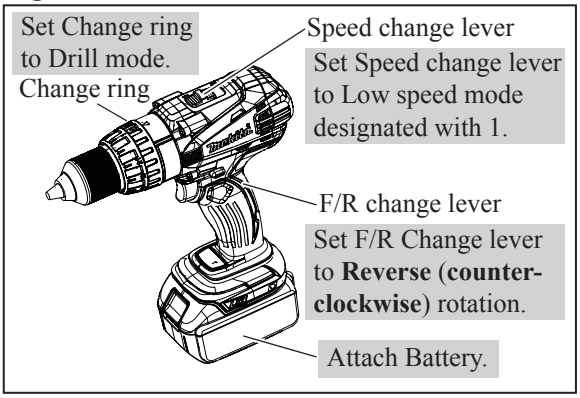


Fig. 3

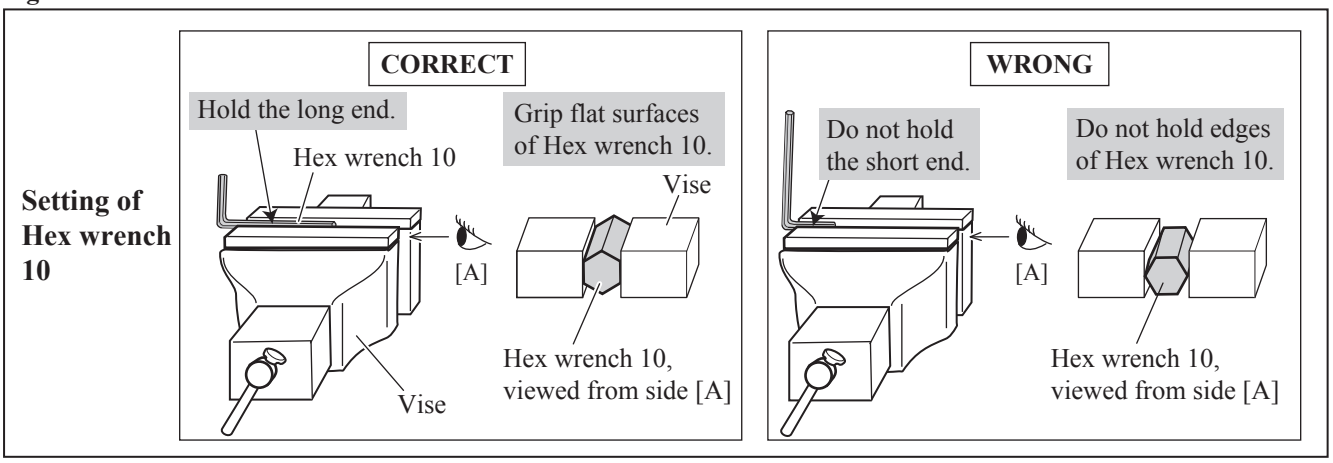
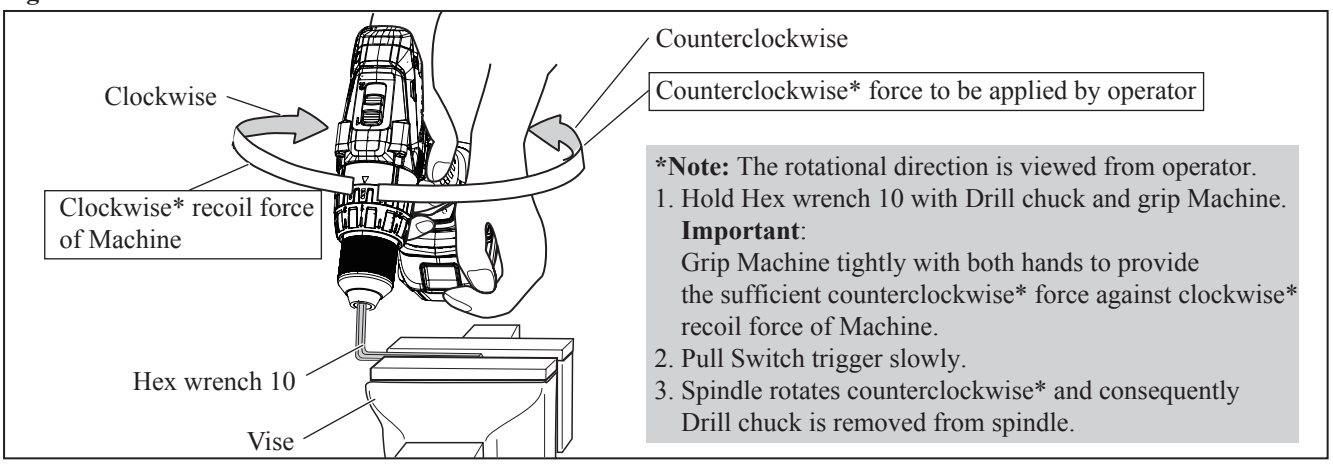


Fig. 4



Repair

[3] DISASSEMBLY/ASSEMBLY

[3] -1. Drill Chuck (cont.)

ASSEMBLING

(1) Set the machine. (**Fig. 5** and **6**)
(2) Set Hex wrench 10 to vise and described in **Fig. 3**.
(3) Set Drill chuck in place. (**Fig. 7**)

Fig. 5

Turn Drill chuck clockwise by hand until it sits on the end of the threaded portion of Spindle.

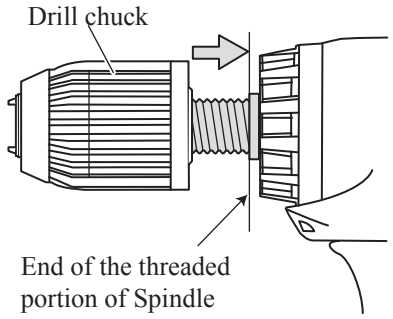


Fig. 6

Set Speed change lever to Low speed mode designated with 1.

Set F/R Change lever to **Forward (clockwise)** rotation.

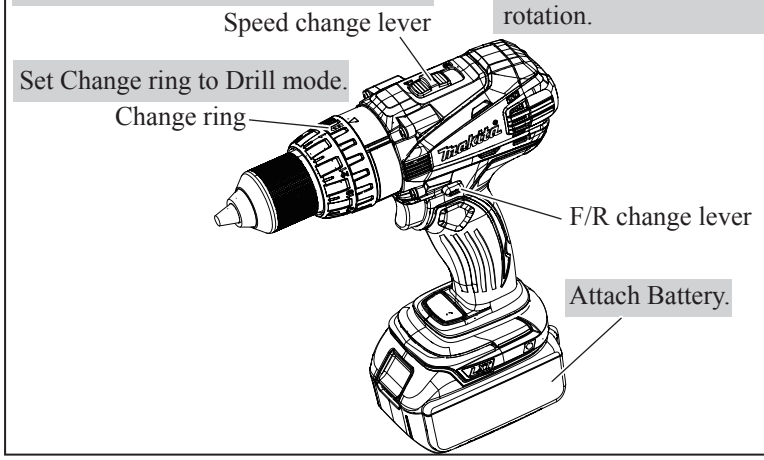
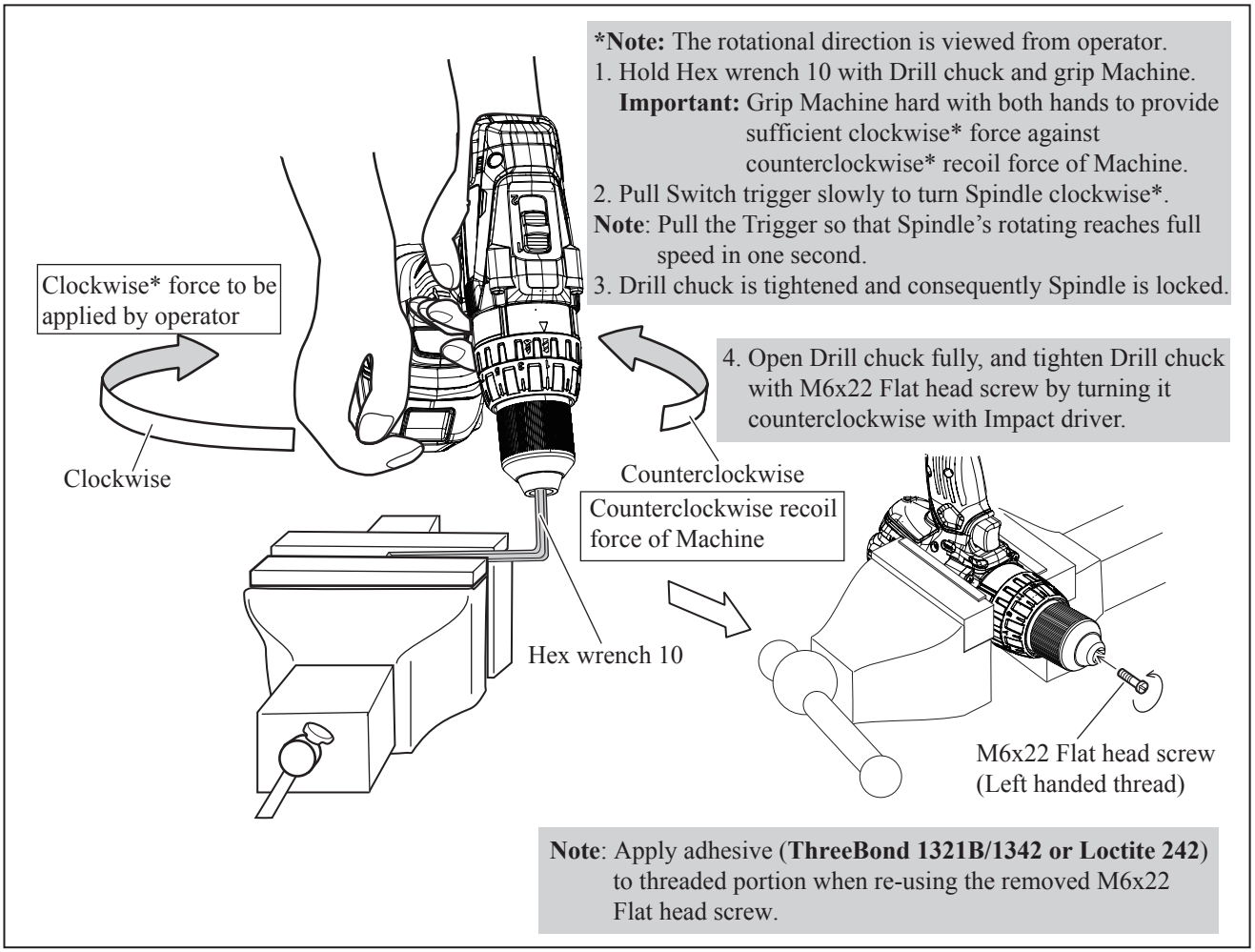


Fig. 7



Repair

[3] DISASSEMBLY/ASSEMBLY

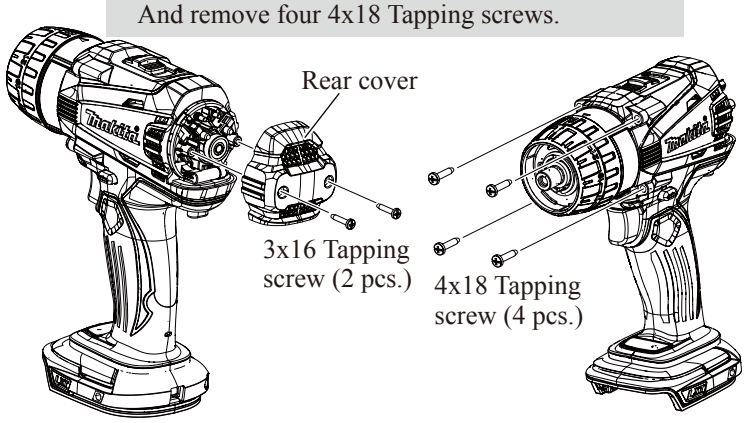
[3] -2. Gear Assembly, Motor Section

DISASSEMBLING

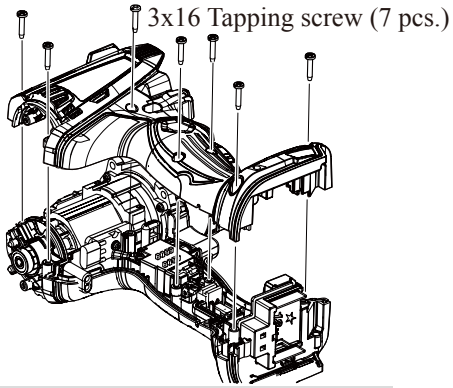
After removing Drill chuck (Re: **Figs. 1**, **2**, **3** and **4)**, disassemble Motor section and Gear assembly. **(Figs. 8** and **9**)

Fig. 8

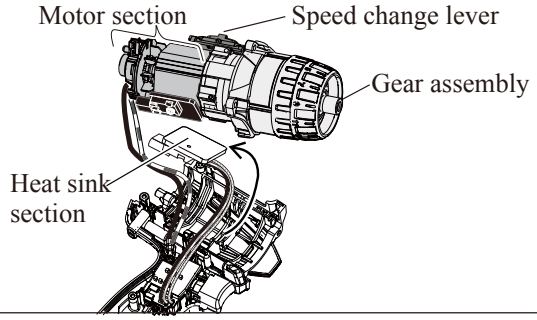
1. Remove two 3x16 Tapping screws and Rear cover. And remove four 4x18 Tapping screws.



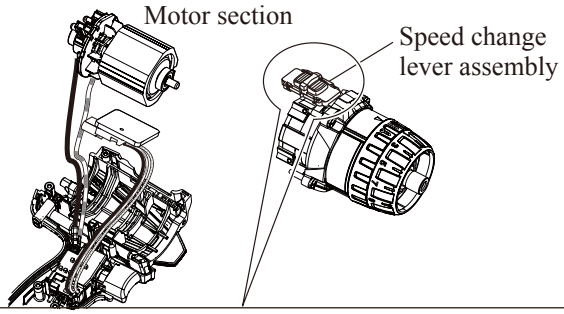
2. Remove Housing R, unscrewing seven 3x16 Tapping screws.



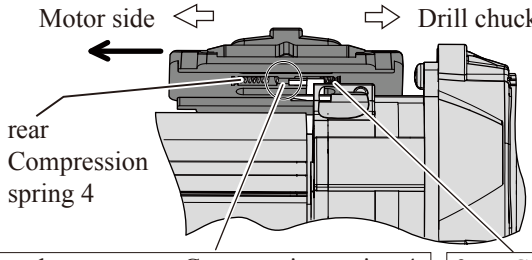
3. Pull out Heat sink section, and remove Gear assembly together with Motor section and Speed change lever.



4. Remove Speed change lever and Motor section from Gear assembly.

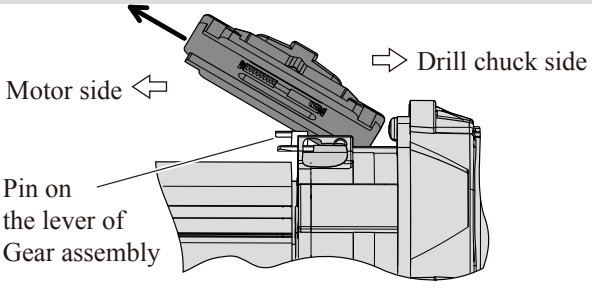


5. Push Speed change lever assembly toward Motor side until it stops to have space between the pin on the lever of Gear assembly and rear Compression spring 4.



Space between rear Compression spring 4 and the pin on the lever of Gear assembly.

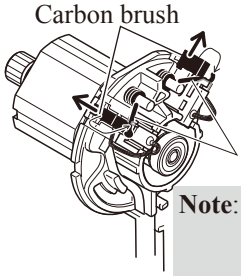
6. Lifting up Motor side of Speed change lever assembly, pull it toward the direction designated with arrow.



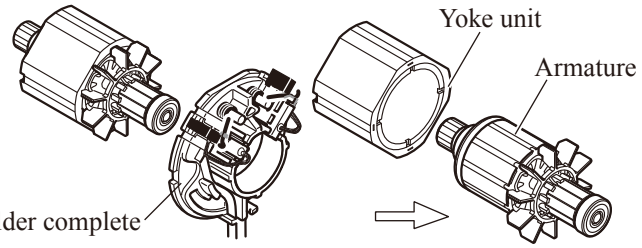
front Compression spring 4 compressed by the lever of Gear assembly

Fig. 9

5. Shift the tail of Torsion spring from top of Carbon brush to the Notch of Brush holder. Carbon brush gets free from the pressure of Torsion spring.



6. From Armature, pull off Brush holder complete and Yoke unit.



Note: Pay attention not to pinch your finger between Yoke unit and Armature when removing. Do not scratch the copper wires of Armature. Yoke unit draws Armature by its considerable strong magnet force.

Repair

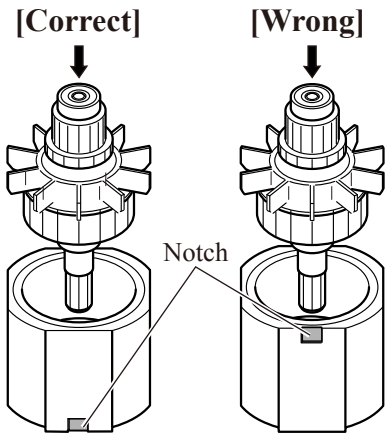
[3] DISASSEMBLY/ASSEMBLY

[3] -2. Gear Assembly, Motor Section (cont.)

ASSEMBLING

(1) Assemble Motor section taking the reverse step of Disassembling. Refer to **Fig. 9**.
Insert Armature into Yoke unit as drawn in **Fig. 10**.

Fig. 10

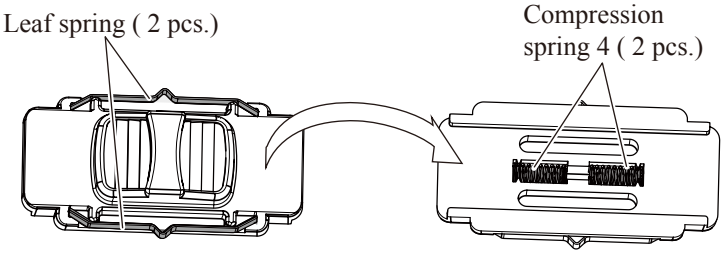


Yoke unit has to be assembled to Armature so that its notch is located on the drive-end side.

Note in Assembling:
1. Do not pinch your finger between Armature fan and Yoke unit.
2. Insert Armature into Yoke unit carefully so that its wire does not damage.

(2) Assemble Brush holder complete to Commutator end of Armature. Refer to the drawings in **Fig. 9**.
Carbon brushes in Brush holder complete have to be still left from Armature's commutator in this step.
(3) Fasten Heat sink with Pan head screw to Yoke unit. And insert the Motor section into Gear assembly, while engaging Armature's gear with the Planet gears in Gear assembly. Refer to the **center right** drawing in **Fig. 8**.
(4) Before mounting Speed change lever assembly, make sure that Lead springs and Compression springs are assembled to Speed change lever assembly. See **Fig. 11**.

Fig. 11



Repair

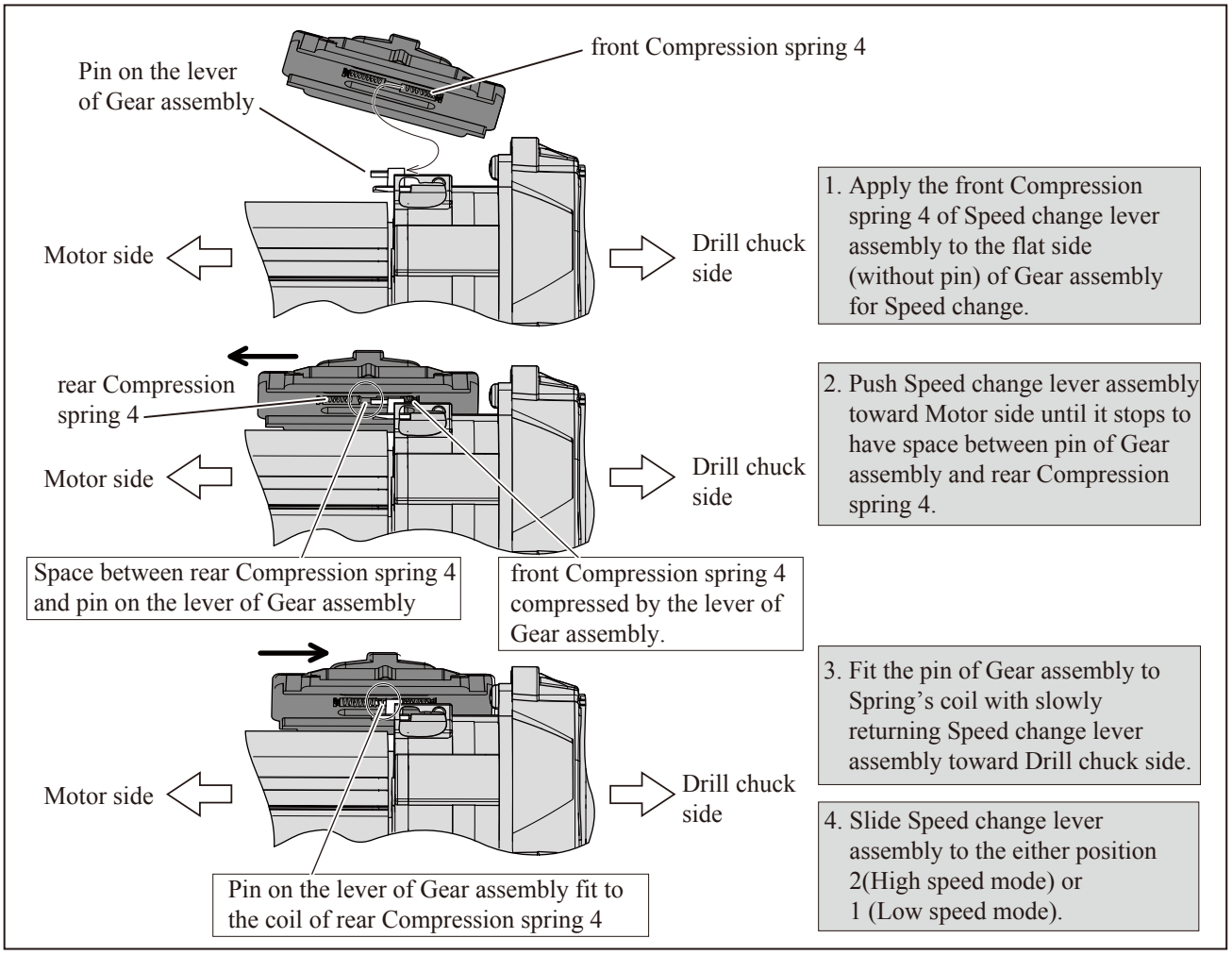
[3] DISASSEMBLY/ASSEMBLY

[3] -2. Gear Assembly, Motor Section

ASSEMBLING

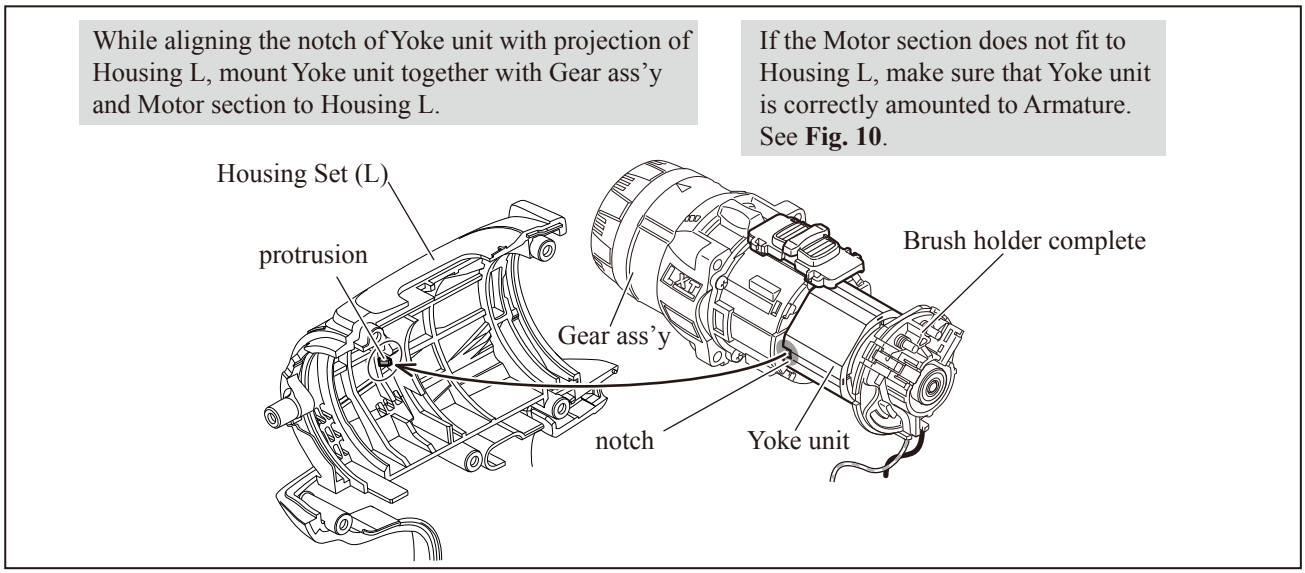
(5) Assemble Speed change lever assembly as drawn in **Fig. 12**.

Fig. 12



(6) Assemble Motor section and Gear assembly as illustrated in **Figs. 13 and 14**.

Fig. 13



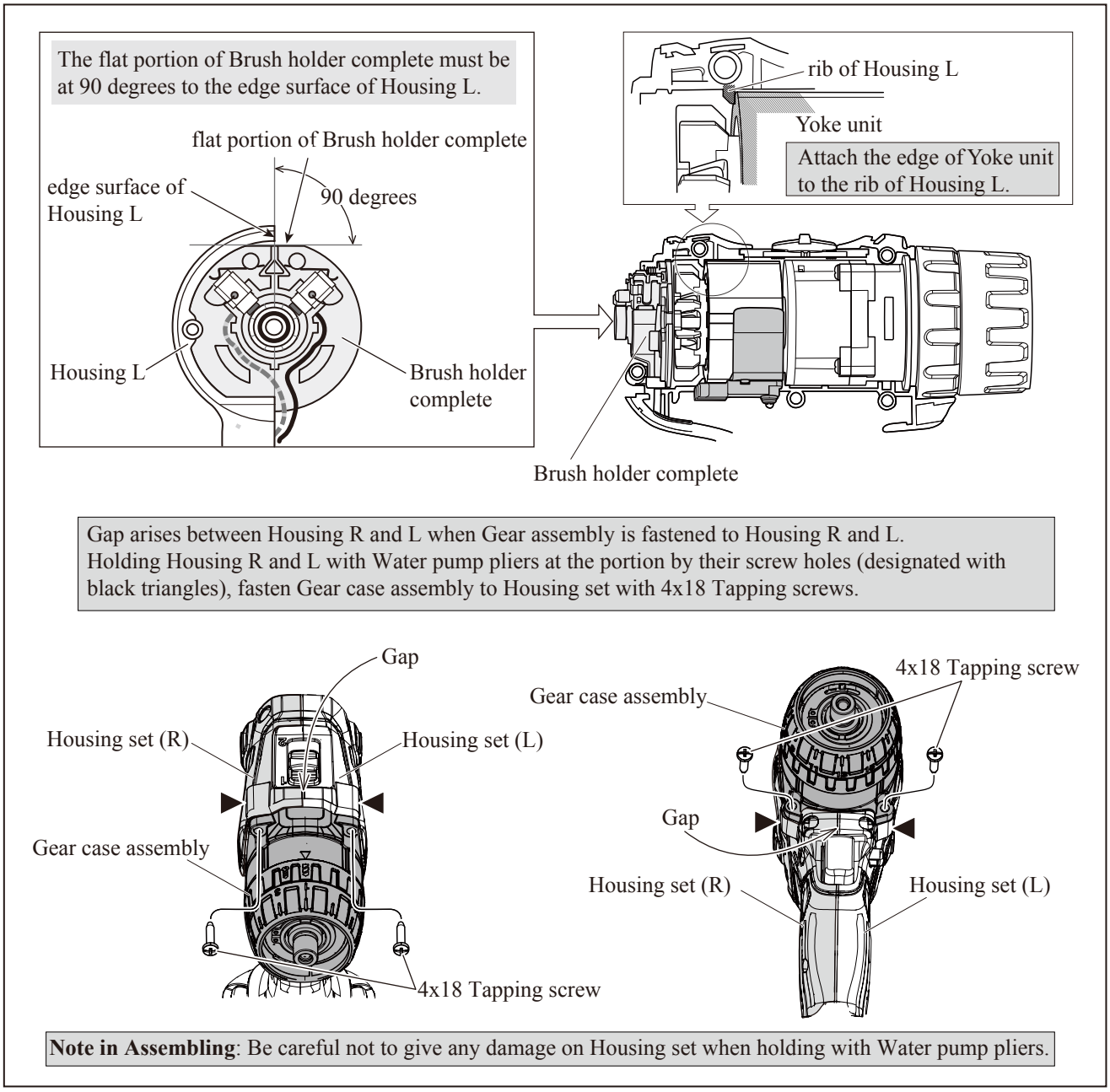
Repair

[3] DISASSEMBLY/ASSEMBLY
[3] -2. Gear Assembly, Motor Section (cont.)

ASSEMBLING

(7) Make sure Brush holder complete and Yoke unit are precisely mounted to Housing R. See **upper** drawing in **Fig. 14**. And then, mount Housing R to Housing L as drawn in **Fig. 14**.

Fig. 14



(8) Fasten Housing R to Housing L with seven 3x16 Tapping screws.
Refer to the **upper right** drawing in **Fig. 8**.

(9) Contact Carbon brush with Armature's commutator, putting Torsion spring on the Carbon brush.
Refer to the **left** drawing in **Fig. 9.**

Repair

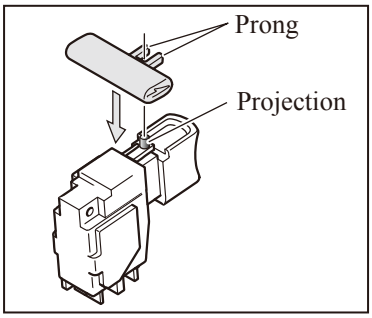
[3] DISASSEMBLY/ASSEMBLY

[3] -3. F/R Change Lever

ASSEMBLING

Put the projection on Switch between the prongs of F/R change lever. (**Fig. 15**)

Fig. 15



[3] -4. Switch plate complete

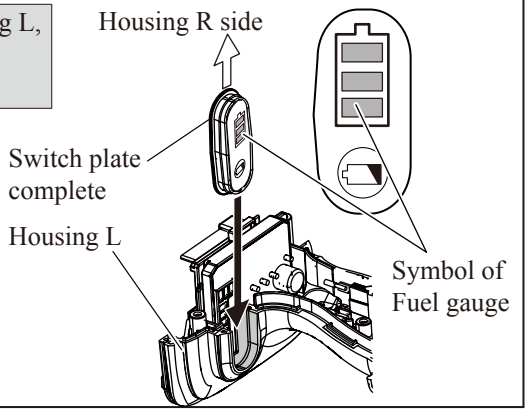
ASSEMBLING

Set Switch plate complete in place. (**Fig. 16**)

Fig. 16

Insert Switch plate complete to Housing L, facing its symbol of Fuel gauge to Housing R side.

Note: Switch plate complete with faced in the wrong direction can not be inserted to Housing L.



[3] -5. Parts related to Drip-proof structure

ASSEMBLING

Assemble Sponge B to Housing L. And assemble Seal and Sponge A to Housing L as drawn in **Fig. 17**.

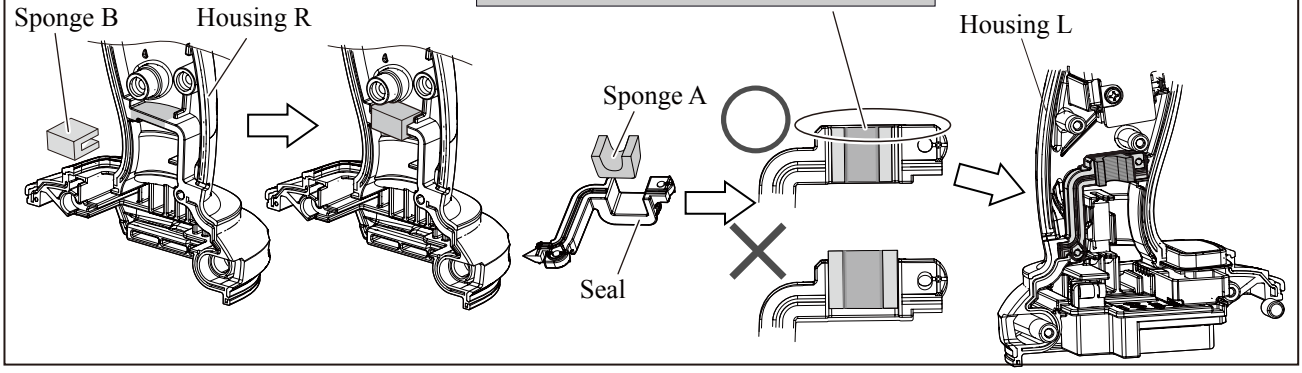
Fig. 17

Assemble Sponge B to Housing R to the portion designated with gray color.

Note: To assure Drop-proof, use new Sponge A and Sponge B.

Assemble Sponge A to Seal.
Note: Edge of the assembled Sponge A has to be flat to the surface of Seal.

Assemble the Seal to Housing L as drawn below.



[3]-6. Cushion

ASSEMBLING

Be sure to install Cushion into Housing set (L) as drawn in **Fig. 18R**.
Note: **Fig. 18F** is the wrong installation. Pay attention to the direction.

Fig. 18R

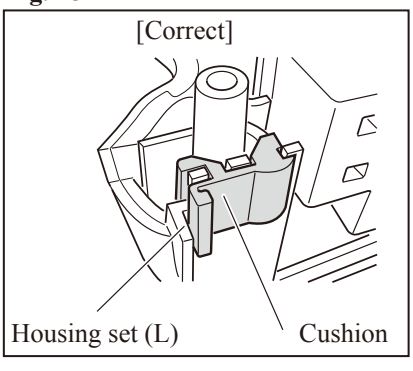
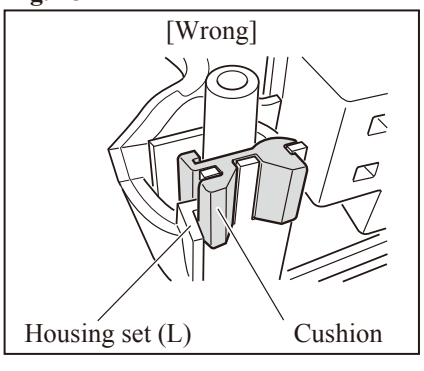
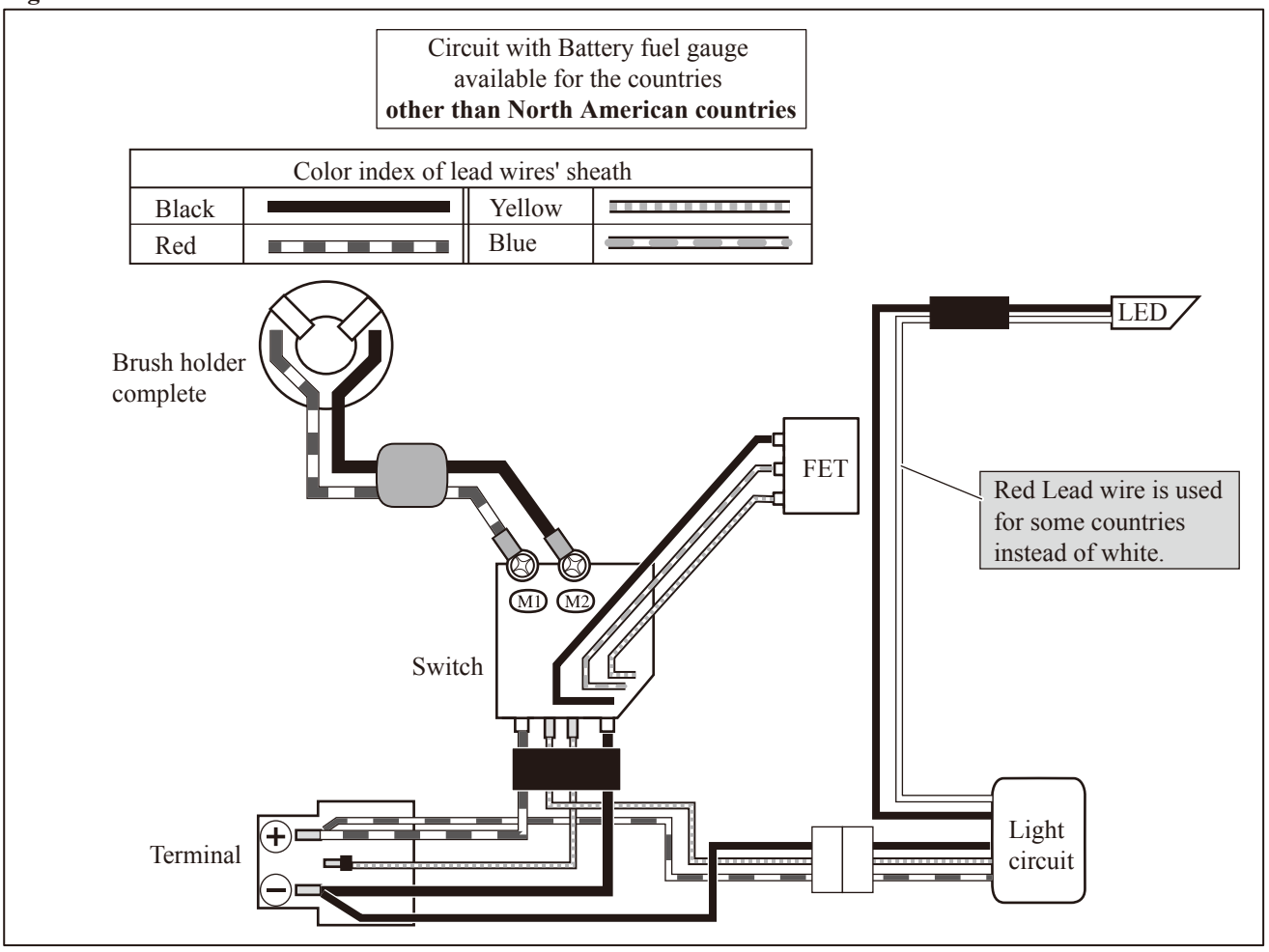


Fig. 18F



Circuit diagram

Fig. D-1



Wiring diagram

Fig. D-2

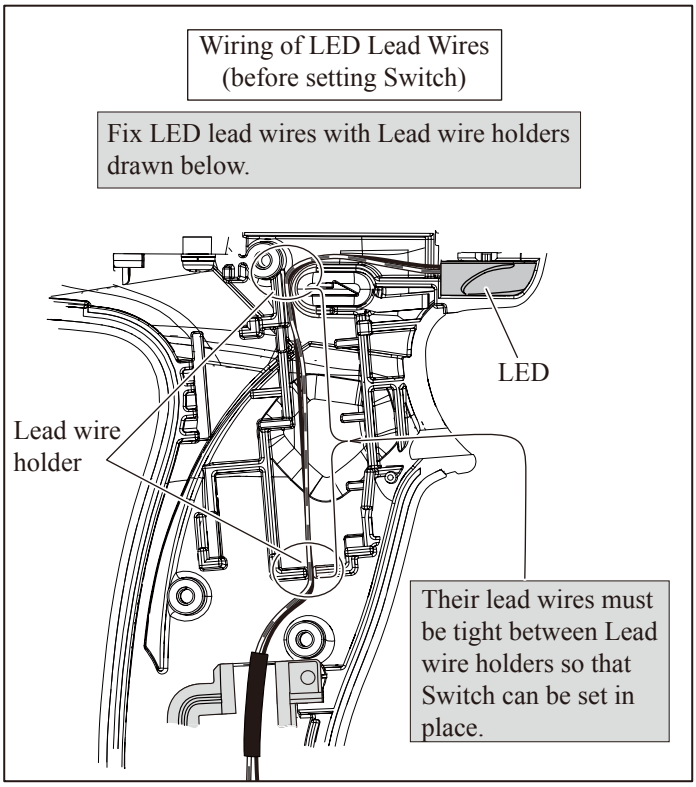
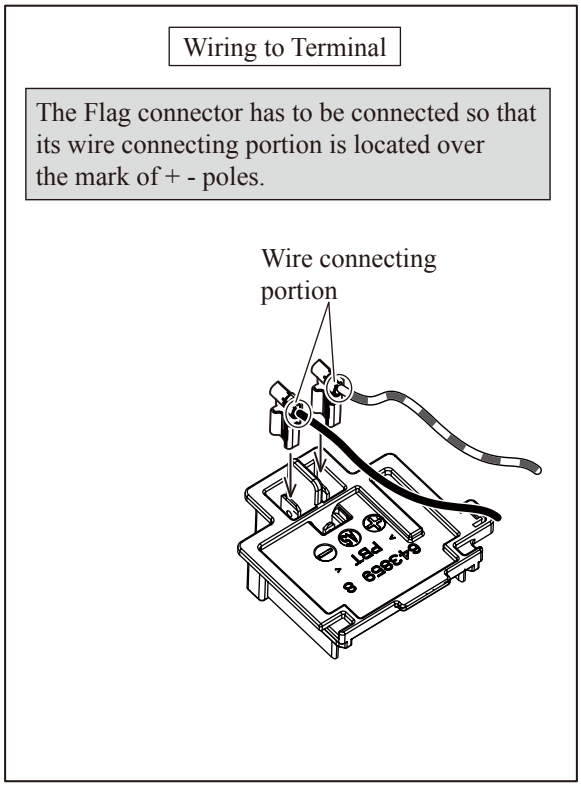


Fig. D-3



Wiring diagram

Fig. D-4

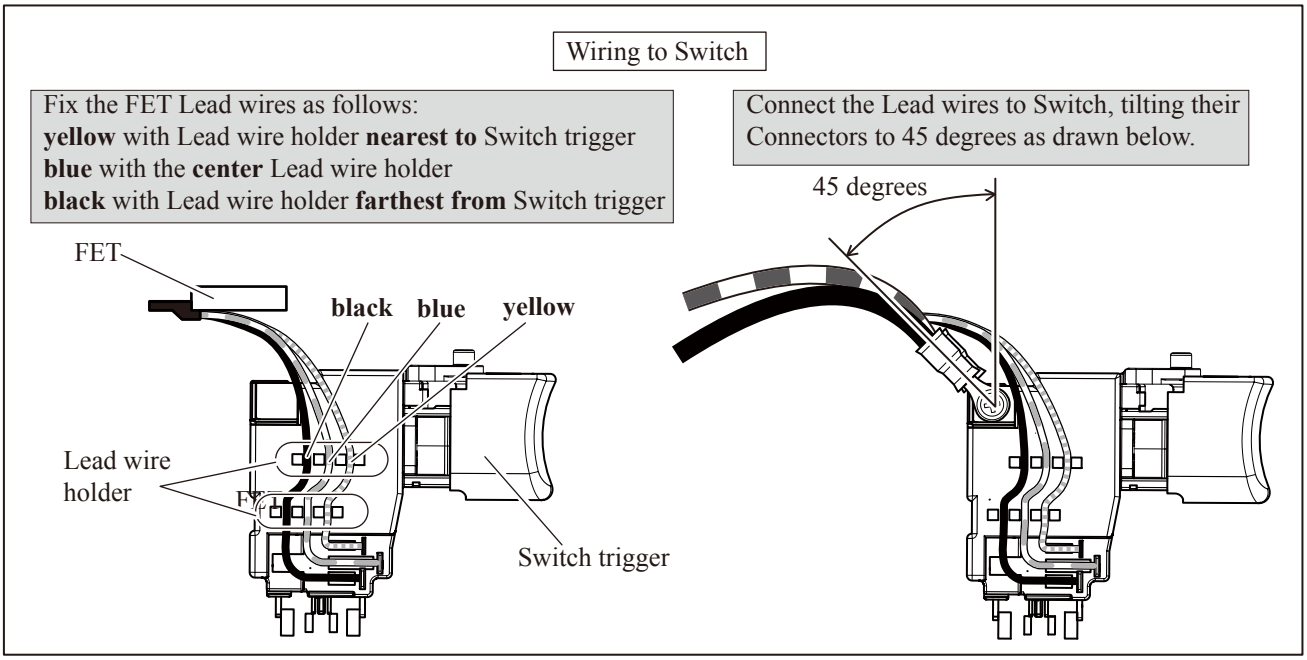
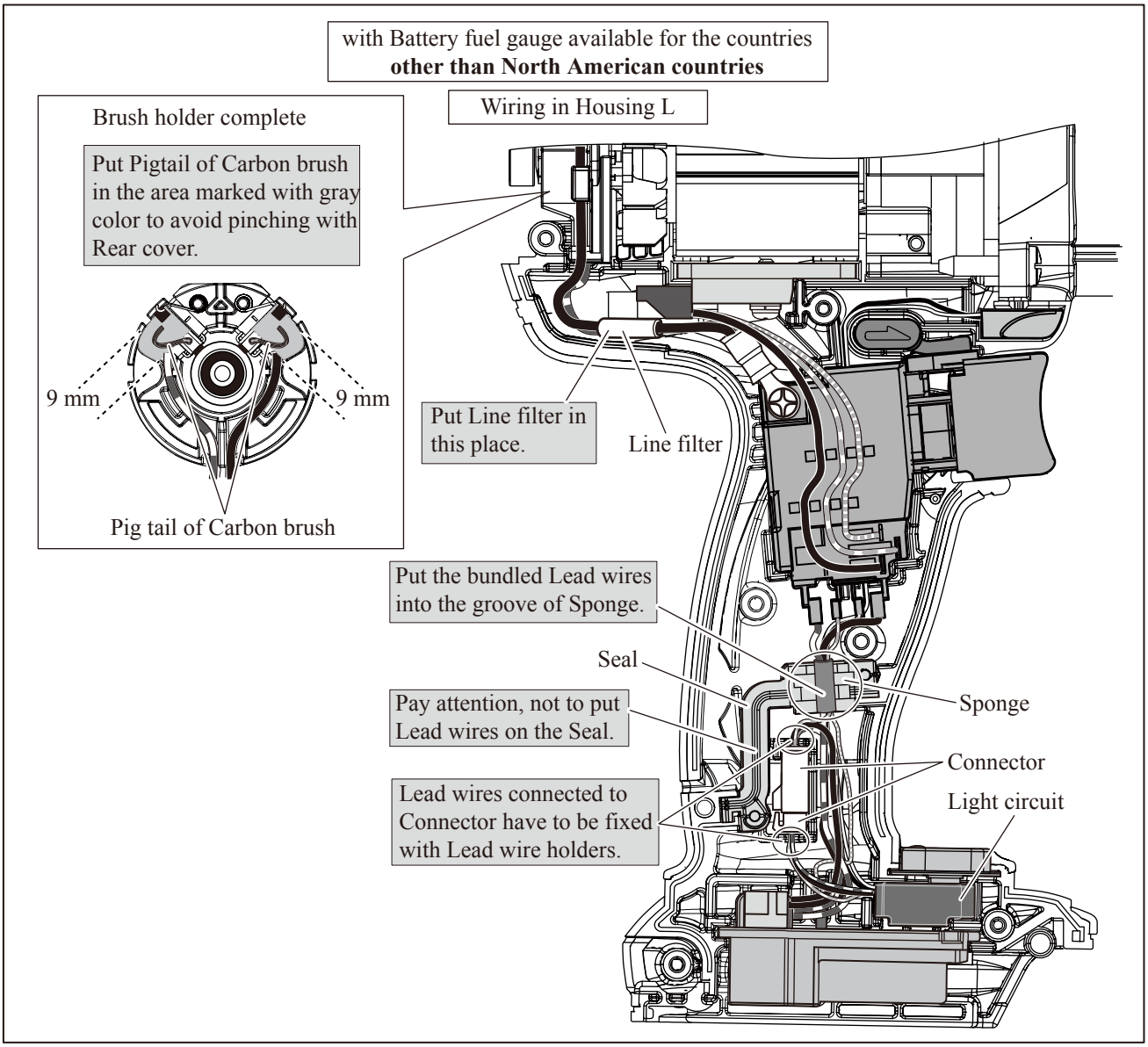
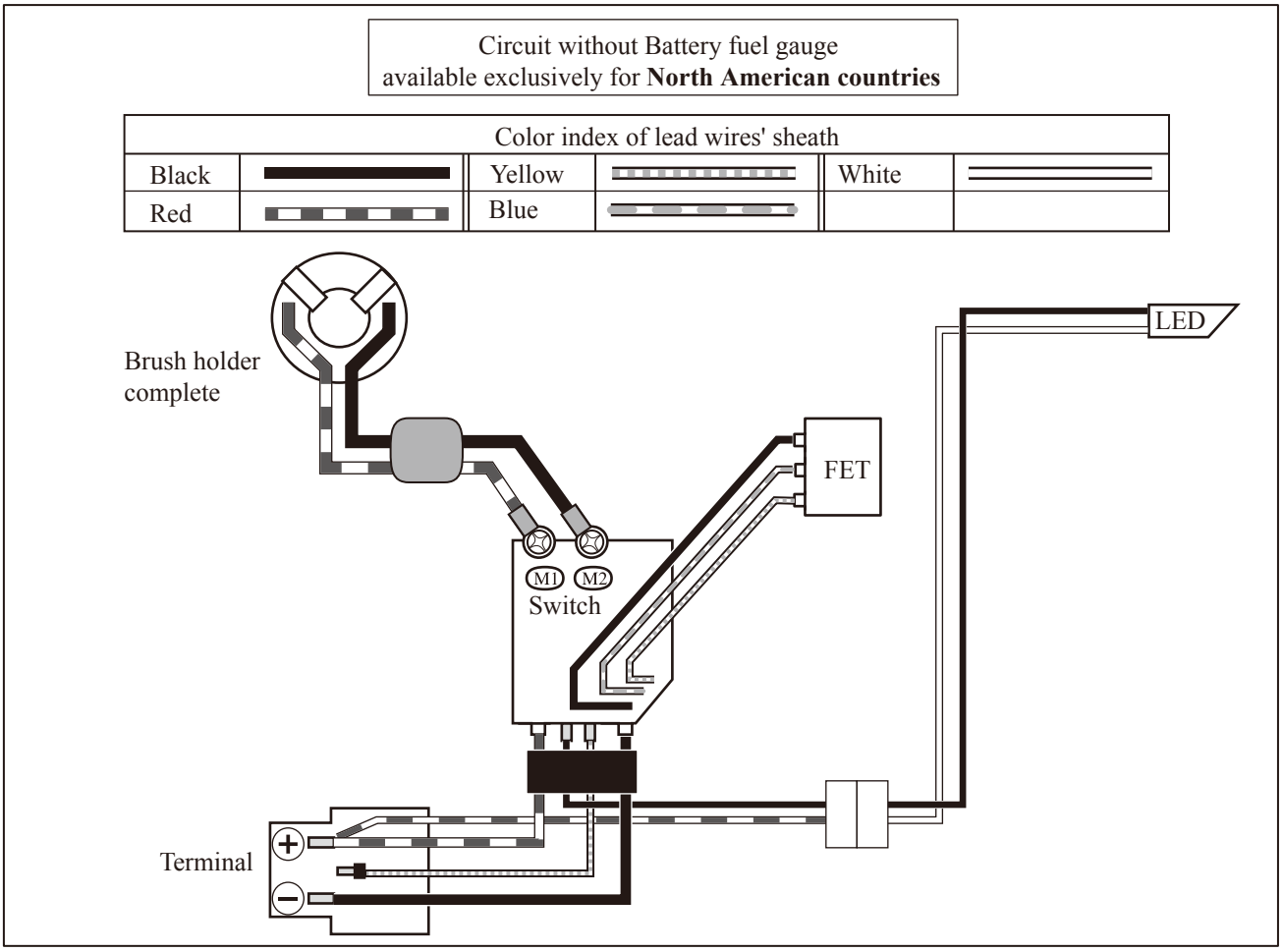


Fig. D-5



Circuit diagram

Fig. D-1A



Wiring diagram

Fig. D-2A

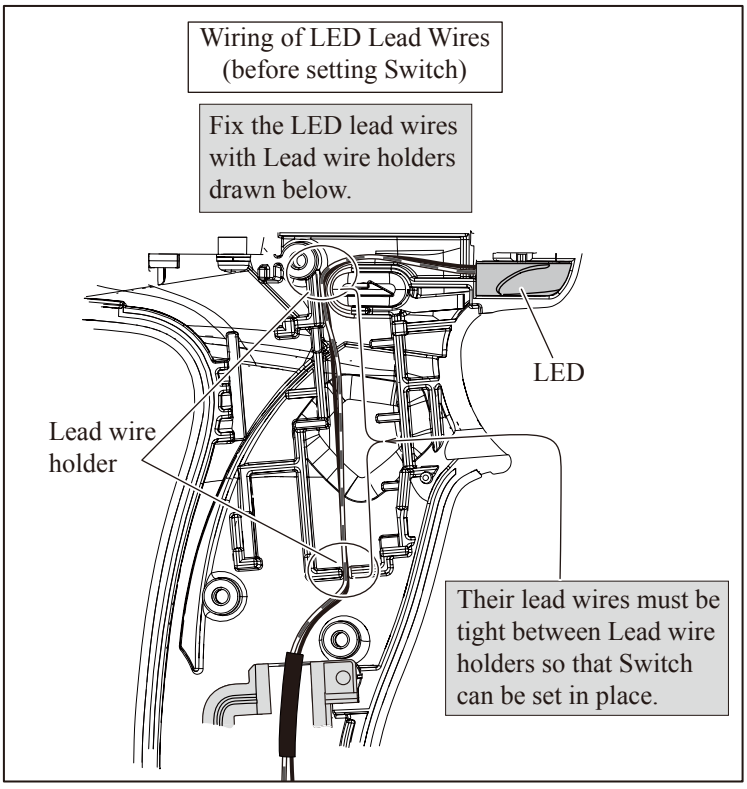
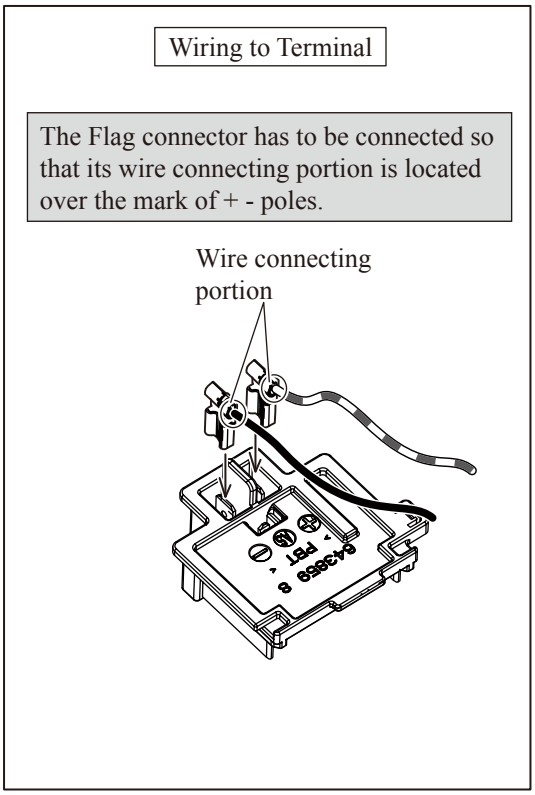


Fig. D-3A



Wiring diagram

Fig. D-4A

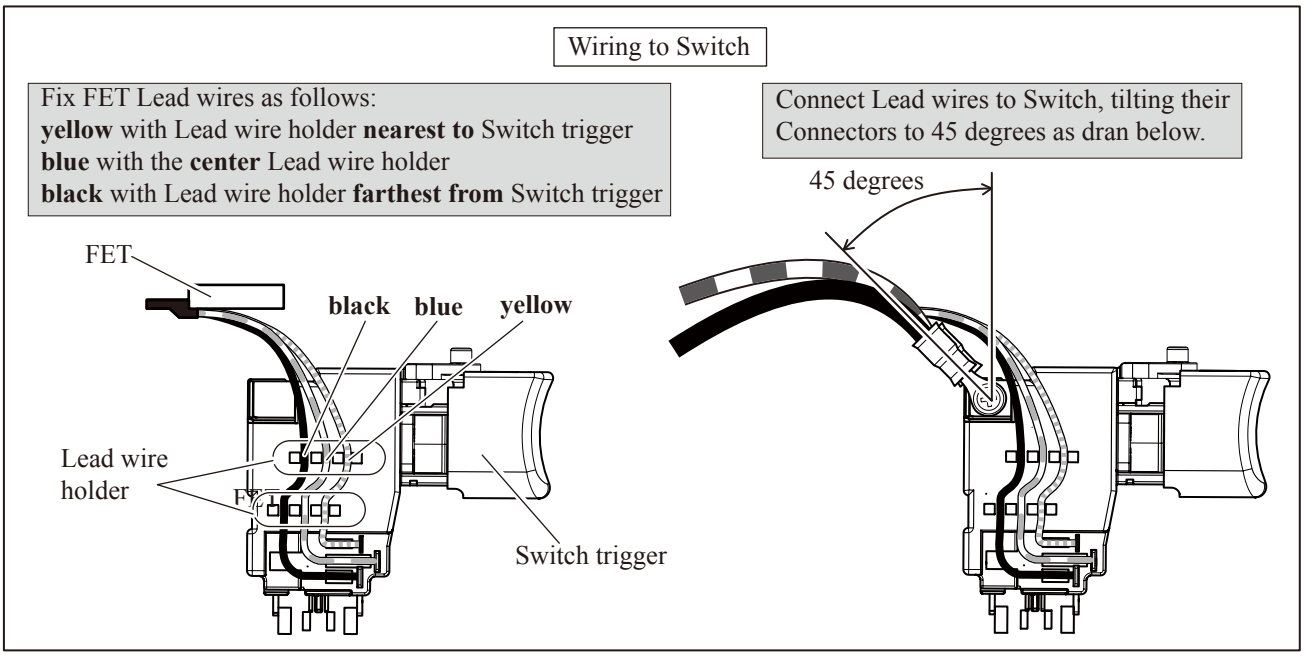
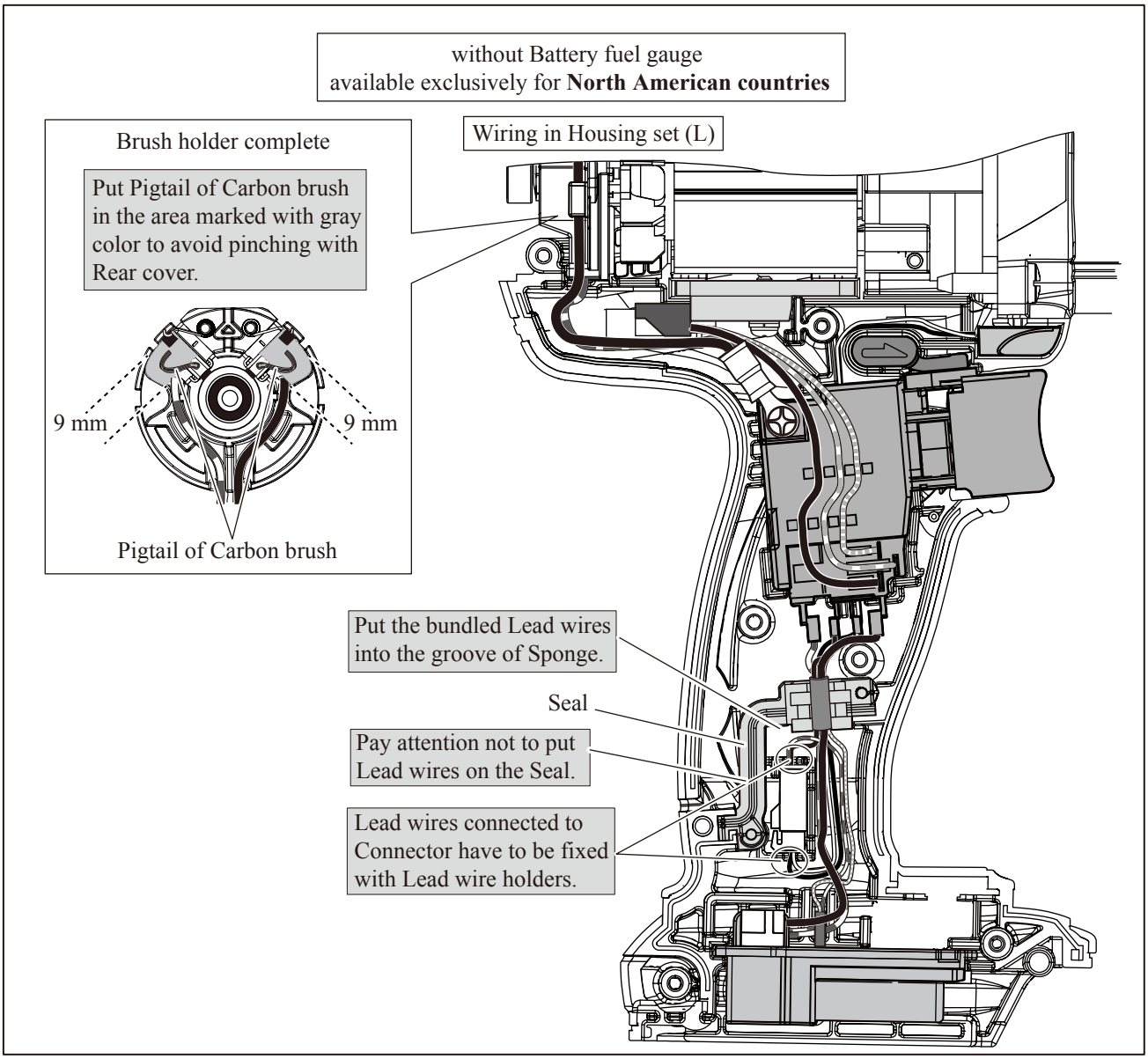



Fig. D-5A